AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application.

1-176. (Canceled)

177. (New) A method for calibrating an analyte sensor, the method comprising:

receiving sensor data from an analyte sensor, including one or more sensor data points;

receiving reference data, including one or more reference data points;

providing one or more matched data pairs by matching a reference data point to a substantially time corresponding sensor data point;

forming a calibration set including the one or more matched data pairs;

forming a conversion function based at least in part on the calibration set, wherein the conversion function is defined by a line formed by a regression including the one or more matched data pairs in the calibration set, and wherein the conversion function is further modified to increase a clinical acceptability of the one or more matched data pairs or the line; and

converting the sensor data into calibrated sensor data.

178. (New) The method of Claim 177, wherein the clinical acceptability is based at least in part on an analysis using a clinical cost function.

179. (New) The method of Claim 178, wherein the clinical cost function comprises a Clarke Error Grid, a Consensus Grid or a mean absolute relative difference.

180. (New) The method of Claim 177, wherein receiving sensor data comprises receiving sensor data that has been smoothed.

181. (New) The method of Claim 177, wherein receiving sensor data comprises smoothing the sensor data.

182. (New) The method of Claim 177, wherein the sensor data is recursively filtered.

183. (New) The method of Claim 177, wherein receiving sensor data comprises receiving the sensor data from a substantially continuous glucose sensor.

184. (New) The method of Claim 177, wherein receiving reference data comprises receiving reference data from an in vitro blood glucose test.

185. (New) The method of Claim 177, wherein receiving reference data comprises downloading reference data via a wireless connection.

186. (New) The method of Claim 177, wherein receiving reference data from a reference analyte monitor comprises receiving within a receiver an internal communication from a reference analyte monitor integral with the receiver.

187. (New) The method of Claim 177, wherein the calibration set comprises a single matched data pair.

188. (New) The method of Claim 177, wherein the calibration set comprises a plurality of matched data pairs.

189. (New) A computer system for calibrating an analyte sensor, the computer system comprising:

a sensor data receiving module configured to receive a data stream comprising one or more sensor data points;

a reference data receiving module configured to receive reference data, including one or more reference data points;

a data matching module configured to form one or more matched data pairs by matching one or more reference data points to one or more substantially time corresponding sensor data points;

a calibration set module configured to form a calibration set including the one or more matched data pairs; and

a conversion function module configured to form a conversion function defined by a line formed by a regression including the one or more matched data pairs in the calibration set, wherein the conversion function module is further configured to modify the conversion function to increase a clinical acceptability of the one or more matched data pairs or the line, and wherein the conversion function module is further configured to convert the sensor data into calibrated sensor data.

190. (New) The computer system of Claim 189, wherein the sensor data receiving module is configured to receive sensor data that has been smoothed.

191. (New) The computer system of Claim 189, wherein the sensor data receiving module is configured to smooth the sensor data.

192. (New) The computer system of Claim 189, wherein the sensor data is recursively filtered.

193. (New) The computer system of Claim 189, wherein the sensor data receiving module is configured to receive the sensor data from a substantially continuous glucose sensor.

194. (New) The computer system of Claim 189, wherein the reference data receiving module is configured to receive the reference data from an in vitro blood glucose test.

195. (New) The computer system of Claim 189, wherein the reference data receiving module is configured to download the reference data via a wireless connection.

196. (New) The computer system of Claim 189, wherein receiving reference data from a reference analyte monitor comprises receiving within a receiver an internal communication from a reference analyte monitor integral with the receiver.

197. (New) The computer system of Claim 189, wherein the calibration set comprises a single matched data pair.

198. (New) The computer system of Claim 189, wherein the calibration set comprises a plurality of matched data pairs.

199. (New) The computer system of Claim 189, wherein the clinical acceptability is based at least in part on an analysis using a clinical cost function.

200. (New) The computer system of Claim 199, wherein the clinical cost function comprises a Clarke Error Grid, a Consensus Grid or a mean absolute relative difference.

201. (New) A method for evaluating a quality of a calibration of an analyte sensor, the method comprising:

receiving sensor data from an analyte sensor, including one or more sensor data points;

receiving reference data, including one or more reference data points;

providing one or more matched data pairs by matching a reference data point to a substantially time corresponding sensor data point;

forming a calibration set including the one or more matched data pairs;

evaluating a quality of the calibration set based on a statistical association of the calibration set and a clinical association of the one or more matched data pairs;

modifying the calibration set in response to the statistical association not meeting a criterion or the clinical association not meeting a criterion; and

processing the sensor data in response to the statistical association meeting a criterion and the clinical association meeting a criterion.

202. (New) The method of Claim 201, wherein receiving sensor data comprises receiving sensor data that has been smoothed.

203. (New) The method of Claim 201, wherein receiving sensor data comprises smoothing the sensor data.

204. (New) The method of Claim 201, wherein the sensor data is recursively filtered.

205. (New) The method of Claim 201, wherein receiving sensor data comprises receiving the sensor data from a substantially continuous glucose sensor.

206. (New) The method of Claim 201, wherein receiving reference data comprises receiving reference data from an in vitro blood glucose test.

207. (New) The method of Claim 201, wherein receiving reference data comprises downloading reference data via a wireless connection.

208. (New) The method of Claim 201, wherein receiving reference data comprises receiving within a receiver an internal communication from a reference analyte monitor integral with the receiver.

209. (New) The method of Claim 201, wherein the calibration set comprises a single matched data pair.

210. (New) The method of Claim 201, wherein the calibration set comprises a plurality of matched data pairs.

211. (New) The method of Claim 201, wherein the clinical association is based at least in part on an analysis using a clinical cost function.

212. (New) The method of Claim 211, wherein the clinical cost function comprises a Clarke Error Grid, a Consensus Grid or a mean absolute relative difference.

213. (New) The method of Claim 201, wherein the statistical association is based at least in part on an analysis using a statistical cost function.

214. (New) The method of Claim 213, wherein the statistical cost function comprises linear regression, non-linear regression, rank correlation, least mean square fit, or mean absolute deviation.

215. (New) The method of Claim 201, wherein processing the sensor data comprises calibrating the sensor data.

216. (New) The method of Claim 201, wherein processing the sensor data comprises displaying the sensor data.

217. (New) The method of Claim 201, further comprising requesting additional reference data in response to the statistical association not meeting a criterion or the clinical association not meeting a criterion.

218. (New) The method of Claim 201, wherein modifying the calibration set comprises adding a matched data pair to the calibration set based on the additional received reference data.

219. (New) The method of Claim 201, further comprising removing a most discordant or oldest matched data pair in response to the statistical association not meeting a criterion or the clinical association not meeting a criterion.

220. (New) A computer system for evaluating a quality of a calibration of an analyte sensor, the system comprising:

a sensor data receiving module configured to receive a data stream comprising one or more sensor data points;

a reference data receiving module configured to receive reference data, including one or more reference data points;

a data matching module configured to form one or more matched data pairs by matching one or more reference data points to one or more substantially time corresponding sensor data points;

a calibration set module configured to form a calibration set including the one or more matched data pairs;

an evaluation module configured to evaluate a quality of the calibration set based on a statistical association of the calibration set and a clinical association of the one or more matched data pairs, wherein the calibration set is modified in response to the

statistical association not meeting a criterion or the clinical association not meeting a criterion; and

a processor module configured to process the sensor data in response to the statistical association meeting a criterion and the clinical association meeting a criterion.

221. (New) The computer system of Claim 220, wherein the reference data receiving module is configured to receive sensor data that has been smoothed.

222. (New) The computer system of Claim 220, wherein the reference data receiving module is configured to smooth the sensor data.

223. (New) The computer system of Claim 220, wherein the sensor data is recursively filtered.

224. (New) The computer system of Claim 220, wherein the reference data receiving module is configured to receive the sensor data from a substantially continuous glucose sensor.

225. (New) The computer system of Claim 220, wherein the reference data receiving module is configured to receive the reference data from an in vitro blood glucose test.

226. (New) The computer system of Claim 220, wherein the reference data receiving module is configured to download the reference data via a wireless connection.

227. (New) The computer system of Claim 220, wherein reference data receiving module is configured to receive within a receiver an internal communication from a reference analyte monitor integral with the receiver.

228. (New) The computer system of Claim 220, wherein the calibration set comprises a single matched data pair.

229. (New) The computer system of Claim 220, wherein the calibration set comprises a plurality of matched data pairs.

230. (New) The computer system of Claim 220, wherein the clinical association is based at least in part on an analysis using a clinical cost function.

231. (New) The computer system of Claim 230, wherein the clinical cost function comprises a Clarke Error Grid, a Consensus Grid or a mean absolute relative difference.

232. (New) The computer system of Claim 220, wherein the statistical association is based at least in part on an analysis using a statistical cost function.

233. (New) The computer system of Claim 232, wherein the statistical cost function comprises linear regression, non-linear regression, rank correlation, least mean square fit, or mean absolute deviation.

234. (New) The computer system of Claim 220, wherein the processor module is configured to calibrate the sensor data in response to the statistical association meeting a criterion and the clinical association meeting a criterion.

235. (New) The system of Claim 220, wherein the processor module is configured to display the sensor data in response to the statistical association meeting a criterion and the clinical association meeting a criterion.

236. (New) The system of Claim 220, wherein the evaluation module is configured to request additional reference data in response to the statistical association not meeting a criterion or the clinical association not meeting a criterion.

237. (New) The system of Claim 220, wherein the evaluation module or the calibration set module is configured to add a matched data pair to the calibration set based on the additional received reference data in response to the statistical association not meeting a criterion or the clinical association not meeting a criterion.

238. (New) The system of Claim 220, wherein the evaluation module or the calibration set module is configured to remove a most discordant or oldest matched data pair in response to the statistical association not meeting a criterion or the clinical association not meeting a criterion.

239. (New) A method for evaluating a calibration of an analyte sensor, the method comprising:

receiving sensor data from an analyte sensor, including one or more sensor data points;

receiving reference data, including one or more reference data points;

providing one or more matched data pairs by matching a reference data point to a substantially time corresponding sensor data point;

forming a calibration set including the one or more matched data pairs;

evaluating in real-time a clinical acceptability of the one or more matched data pairs, wherein the clinical acceptability is based at least in part on a clinical error grid analysis; and

processing the sensor data in response to the clinical acceptability of the one or more matched data pairs meeting a criterion.

240. (New) The method of Claim 239, wherein receiving sensor data comprises receiving sensor data that has been smoothed.

241. (New) The method of Claim 239, wherein receiving sensor data comprises smoothing the sensor data.

242. (New) The method of Claim 239, wherein the sensor data is recursively filtered.

243. (New) The method of Claim 239, wherein receiving sensor data comprises receiving the sensor data from a substantially continuous glucose sensor.

244. (New) The method of Claim 239, wherein receiving reference data comprises receiving reference data from an in vitro blood glucose test.

245. (New) The method of Claim 239, wherein receiving reference data comprises downloading reference data via a wireless connection.

246. (New) The method of Claim 239, wherein receiving reference data comprises receiving within a receiver an internal communication from a reference analyte monitor integral with the receiver.

247. (New) The method of Claim 239, wherein the calibration set comprises a single matched data pair.

248. (New) The method of Claim 239, wherein the calibration set comprises a plurality of matched data pairs.

249. (New) The method of Claim 239, wherein the clinical error grid analysis comprises a Clarke Error Grid or a Consensus Grid analysis.

250. (New) The method of Claim 239, wherein processing the sensor data comprises calibrating the sensor data.

251. (New) The method of Claim 239, wherein processing the sensor data comprises displaying the sensor data.

252. (New) The method of Claim 239, further comprising requesting additional reference data in response to the clinical acceptability not meeting a criterion.

253. (New) The method of Claim 239, further comprising modifying the calibration set based on the additional received reference data.

254. (New) The method of Claim 239, further comprising removing a most discordant or oldest matched data pair in response to the clinical acceptability not meeting a criterion.

255. (New) A computer system for evaluating a calibration of an analyte sensor, the method comprising:

a sensor data receiving module configured to receive a data stream comprising one or more sensor data points;

a reference data receiving module configured to receive reference data, including one or more reference data points;

a data matching module configured to form one or more matched data pairs by matching one or more reference data points to one or more substantially time corresponding sensor data points;

a calibration set module configured to form a calibration set including the one or more matched data pairs;

an evaluation module configured to evaluate a clinical acceptability of the one or more matched data pairs in real-time, wherein the clinical acceptability is based at least in part on a clinical error grid analysis; and

a processor module configured to process the sensor data in response to the clinical acceptability of the one or more matched data pairs meeting a criterion.

256. (New) The computer system of Claim 255, wherein reference data receiving module is configured to receive sensor data that has been smoothed.

257. (New) The computer system of Claim 255, wherein the reference data receiving module is configured to smooth the sensor data.

258. (New) The computer system of Claim 255, wherein the sensor data is recursively filtered.

259. (New) The computer system of Claim 255, wherein the reference data receiving module is configured to receive the sensor data from a substantially continuous glucose sensor.

260. (New) The computer system of Claim 255, wherein reference data receiving module is configured to receive the reference data from an in vitro blood glucose test.

261. (New) The computer system of Claim 255, wherein reference data receiving module is configured to download the reference data via a wireless connection.

262. (New) The computer system of Claim 255, wherein reference data receiving module is configured to receive within a receiver an internal communication from a reference analyte monitor integral with the receiver.

263. (New) The computer system of Claim 255, wherein the calibration set comprises a single matched data pair.

264. (New) The computer system of Claim 255, wherein the calibration set comprises a plurality of matched data pairs.

265. (New) The computer system of Claim 255, wherein the clinical error grid analysis comprises a Clarke Error Grid or a Consensus Grid analysis.

266. (New) The computer system of Claim 255, wherein the processor module is configured to calibrate the sensor data in response to the clinical acceptability meeting a criterion.

267. (New) The computer system of Claim 255, wherein the processor module is configured to display the sensor data in response to the clinical acceptability meeting a criterion.

268. (New) The computer system of Claim 255, wherein the evaluation module is configured to request additional reference data in response to the clinical acceptability meeting a criterion.

269. (New) The computer system of Claim 255, wherein the evaluation module or the calibration set module is configured to add a matched data pair to the calibration set based on the additional received reference data in response to the clinical acceptability meeting a criterion.

270. (New) The computer system of Claim 255, wherein the evaluation module or the calibration set module is configured to remove a most discordant or oldest matched data pair in response to the clinical acceptability meeting a criterion.